



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/713,194	11/17/2003	Hiroki Maeda	DAIN:540A	9579
25944	7590	06/13/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			VO, HAI	
			ART UNIT	PAPER NUMBER

1771

DATE MAILED: 06/13/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Art Unit: 1771

1. All of the art rejections have been withdrawn in view of the present response.

Neither JP 09-043581 nor EP 763 532 teach or suggest the information recording medium wherein a thickness of the gap between the electrodes is larger than a domain size of the liquid crystal compound at least in the initial state of the liquid crystal material and the thickness of the gap between the electrodes being smaller than a domain size of the liquid crystal compound in a cooled state from the isotropic phase in a final state. However, upon further consideration, new grounds of rejections are made in view of Fujumura et al (US 4,946,260).

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 13, and 16-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is confusing what is meant by "the thickness of the gap is the electrodes being smaller than a domain size of the liquid crystal compound in a cool state from the isotropic phase in a final state".

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujumura et al (US 4,946,260) in view of JP 09-043581 as evidenced by Clark et al (US 5,227,905). Shimizu et al (US 5,905,547) is relied on as an equivalent form of JP 09-043581. Fujumura discloses an information recording medium comprising a substrate, a pair of electrodes, a liquid crystal material filled into a gap between the electrodes as shown in figure 1. Fujumura discloses a gap between the electrodes having a thickness of 5.19 microns within the range as disclosed in the present specification (table 5). Fujumura discloses applying a voltage across the upper and lower electrodes as shown in figures 43A-43I. Fujumura does not specifically disclose the liquid crystal material comprising a rod-shaped liquid crystal compound. Shimizu, however, teaches an information recording medium comprising a pair of electrodes, a liquid crystalline charge transfer material filled into a gap between the electrodes (figure 2). Shimizu teaches the liquid crystal material having a chiral smectic C and Clark evidences that a liquid crystal having a chiral smectic C is rod-shaped. Therefore, Shimizu discloses the liquid crystal material substantially having a rod-shape. Hence, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the rod-shaped liquid crystal material motivated by the desire to offer a display image having excellent sharpness and brightness. Since the resulting information recording medium of Fujumura as modified by Shimizu comprises the same liquid crystal material and the gap between the

electrodes having a thickness within the range as disclosed in the present specification, it is the examiner's position that the thickness of the gap between the electrodes would be inherently smaller than a domain size of the liquid crystal compound in a cooled state from the isotropic phase in a final state. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is incomplete. The same token is applied to the functional language "the information recording medium is configured so that information can be recorded by application of thermal energy to an area of the medium and recorded information can be read by detecting a value of photoelectric current generated by light applied to the area of the medium at which information was recorded". It appears that the information recording medium of Fujumura as modified by Shimizu meets all the structural limitations as required by the claims, it is the examiner's position that the capability of performing such a function would be inherently present as like material has like property.

6. Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 09-043581 in view of Fujumura et al (US 4,946,260) as evidenced by Clark et al (US 5,227,905). Shimizu et al (US 5,905,547) is relied on as an equivalent form of JP 09-043581. Shimizu teaches an information recording medium comprising a substrate, a pair of electrodes, a liquid crystalline charge transfer material filled into a gap between the electrodes (figure 2). Shimizu teaches the liquid crystal material having a chiral smectic C and Clark evidences that a liquid crystal having a chiral smectic C is rod-shaped. Therefore, Shimizu discloses the liquid

crystal material substantially having a rod-shape. Shimizu does not specifically teach a thickness of the gap between the electrodes. Fujumura, however, discloses an information recording medium comprising a substrate, a pair of electrodes, a liquid crystal material filled into a gap between the electrodes as shown in figure 1. Fujumura discloses a gap between the electrodes having a thickness of 5.19 microns within the range as disclosed in the present specification (table 5). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the information recording medium having a gap between the electrodes with a thickness as described by Fujumura motivated by the desire to provide the shutter with a high-speed response characteristics. Since the resulting information recording medium of Shimizu as modified by Fujumura comprises the same liquid crystal material and the gap between the electrodes having a thickness within the range as disclosed in the present specification, it is the examiner's position that the thickness of the gap between the electrodes would be inherently smaller than a domain size of the liquid crystal compound in a cooled state from the isotropic phase in a final state. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is incomplete. The same token is applied to the functional language "the information recording medium is configured so that information can be recorded by application of thermal energy to an area of the medium and recorded information can be read by detecting a value of photoelectric current generated by light applied to the area of the

medium at which information was recorded". It appears that the information recording medium of Shimizu as modified by Fujumura meets all the structural limitations as required by the claims, it is the examiner's position that the capability of performing such a function would be inherently present as like material has like property.

7. Claims 13, and 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujumura et al (US 4,946,260) in view of EP 763 532. Fujumura discloses an information recording medium comprising a substrate, a pair of electrodes, a liquid crystal material filled into a gap between the electrodes as shown in figure 1. Fujumura discloses a gap between the electrodes having a thickness of 5.19 microns within the range as disclosed in the present specification (table 5). Fujumura discloses applying a voltage across the upper and lower electrodes as shown in figures 43A-43I. Fujumura does not specifically disclose the liquid crystal material being one of the elements selected in the Markush group as set forth in the claims. EP 763 532, however, teaches an information recording medium comprising a pair of electrodes, a liquid crystalline charge transfer material filled into a gap between the electrodes (figure 1). EP'532 teaches the liquid crystal material made from 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the liquid crystal charge transfer material as taught by EP'532 motivated by the desire to offer a display image having excellent sharpness and brightness. Since EP'532 uses

the same liquid crystal material as Applicants, it is the examiner's position the rod-shape and charge transport property would be inherently present. Like material has like property. Since the resulting information recording medium of Fujumura as modified by EP '532 comprises the same liquid crystal material and the gap between the electrodes having a thickness within the range as disclosed in the present specification, it is the examiner's position that the thickness of the gap between the electrodes would be inherently larger than a domain size of the liquid crystal compound at least in the initial state of the liquid crystal material and as well as that the thickness of the gap between the electrodes would be inherently smaller than a domain size of the liquid crystal compound in a cooled state from the isotropic phase in a final state. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is incomplete. The same token is applied to the functional language "the information recording medium is configured so that information can be recorded by application of thermal energy to an area of the medium and recorded information can be read by detecting a value of photoelectric current generated by light applied to the area of the medium at which information was recorded". It appears that the information recording medium of Fujumura as modified by EP '532 meets all the structural limitations as required by the claims, it is the examiner's position that the capability of performing such a function would be inherently present as like material has like property.

8. Claims 13, and 16- 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 763 532 in view of Fujumura et al (US 4,946,260). EP 763 532 teaches an information recording medium comprising a pair of electrodes, a liquid crystalline charge transfer material filled into a gap between the electrodes (figure 1). EP'532 teaches the liquid crystal material made from 2-(4'-heptyloxyphenyl)-6-dodecylthiobenzothiazole. EP'532 discloses applying a voltage across the upper and lower electrodes as shown in figure 3. Since EP'532 uses the same liquid crystal material as Applicants, it is the examiner's position the rod-shape and charge transport property would be inherently present. EP 763 does not specifically disclose that a thickness of the gap between the electrodes is larger than a domain size of the liquid crystal compound at least in the initial state of the liquid crystal material and the thickness of the gap between the electrodes being smaller than a domain size of the liquid crystal compound in a cooled state from the isotropic phase in a final state. Fujumura, however, discloses an information recording medium comprising a substrate, a pair of electrodes, a liquid crystal material filled into a gap between the electrodes as shown in figure 1. Fujumura discloses a gap between the electrodes having a thickness of 5.19 microns within the range as disclosed in the present specification (table 5). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the information recording medium having a gap between the electrode with a thickness as described by Fujumura motivated by the desire to provide the

shutter with a high-speed response characteristics. Since the resulting information recording medium of EP '532 as modified by Fujumura comprises the same liquid crystal material and the gap between the electrodes having a thickness within the range as disclosed in the present specification, it is the examiner's position that the thickness of the gap between the electrodes would be inherently larger than a domain size of the liquid crystal compound at least in the initial state of the liquid crystal material and the thickness of the gap between the electrodes would be inherently smaller than a domain size of the liquid crystal compound in a cooled state from the isotropic phase in a final state. It seems from the claim, if one meets the structure recited, the properties must be met or Applicant's claim is incomplete. The same token is applied to the functional language "the information recording medium is configured so that information can be recorded by application of thermal energy to an area of the medium and recorded information can be read by detecting a value of photoelectric current generated by light applied to the area of the medium at which information was recorded". It appears that the information recording medium of EP '532 as modified by Fujumura meets all the structural limitations as required by the claims, it is the examiner's position that the capability of performing such a function would be inherently present as like material has like property.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hai Vo whose telephone number is (571) 272-

Art Unit: 1771

1485. The examiner can normally be reached on Monday through Thursday, from 9:00 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

HV



HAI VO
PRIMARY EXAMINER